



ABC's of Home Networking

User's Guide to Understanding the Basics of Home Networks

An infographic titled "Home Networking" illustrating a central DSL access point connected to various home devices. The access point is shown as a red device on a wall. A red callout box labeled "DSL Access Point" lists: Multiplayer gaming, Video on demand, Home security, and Digital audio. A red callout box labeled "DSL Internet Access" points to the access point. A "Wired PC" is shown with a callout box listing: Streaming video and Print/file sharing. A "Wireless Gaming" section shows a person playing a game on a console. A "Wireless Laptop" section shows a person using a laptop with a callout box listing: Distance learning, Video calls, and MP3 downloads. An "IP Phone" section shows a person on a phone with a callout box listing: Internet access, Multiple voice lines, Wireless printing, and Wireless IP phone. A "Printer" is also shown with a callout box listing: Internet access, Multiple voice lines, Wireless printing, and Wireless IP phone. A large screen displays a game with "TOTAL 5,530 pts." and "Front door".

DSL Access Point

- Multiplayer gaming
- Video on demand
- Home security
- Digital audio

DSL Internet Access

Wired PC

- Streaming video
- Print/file sharing

Wireless Gaming

Wireless Laptop

- Distance learning
- Video calls
- MP3 downloads

IP Phone

- Internet access
- Multiple voice lines
- Wireless printing
- Wireless IP phone

Printer

- Internet access
- Multiple voice lines
- Wireless printing
- Wireless IP phone

Home Networking

At the heart of the digital home sits the DSL access point distributing a host of enhanced content and services throughout the home

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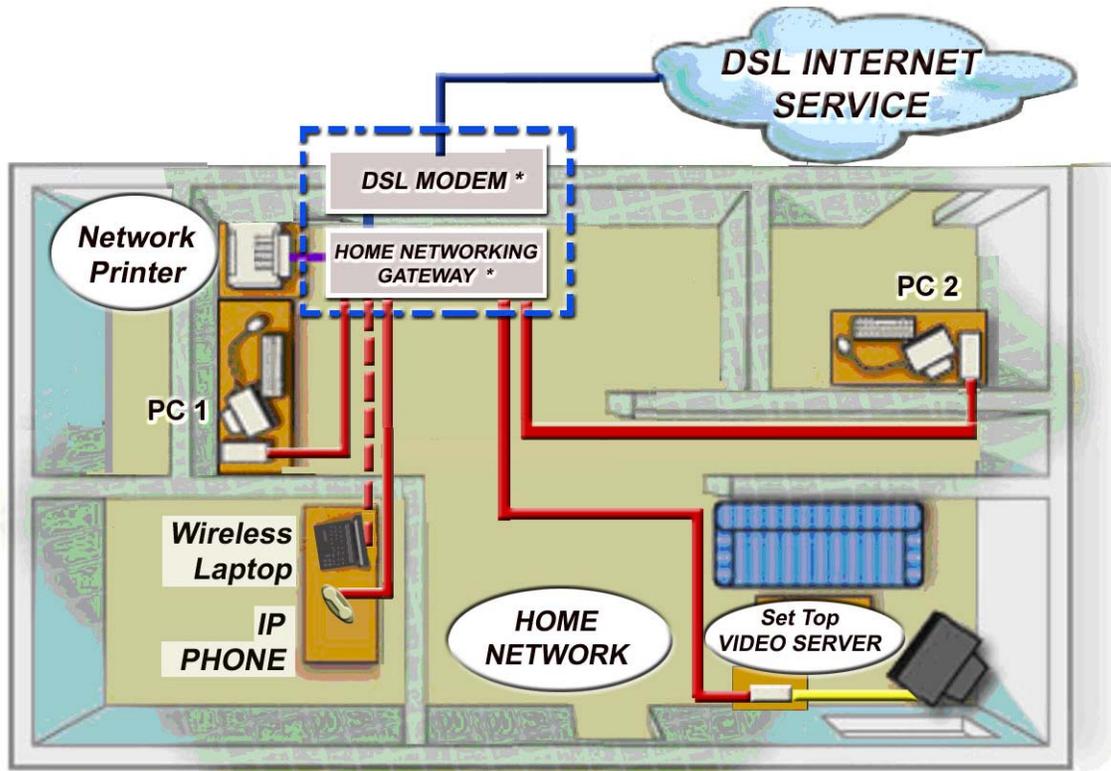
Introduction

It seems everyone is on the "net" these days, and as more homes gain multiple computers and adopt broadband, the interest in networking those computers and other devices has increased. By the end of 2010, the DSLF has established a goal of 500 million subscribers around the world to have a high-speed DSL connection. In its new report, "Worldwide Home Networking 2004-2008 Forecast and Analysis," IDC expects home network households to grow 25% to 111 million by 2008. And according to DLNA (Digital Living Network Alliance), research predicts that 52 % of online households in America will have home networks by 2008.

This guide focuses on explaining the basic components users will need for this home networking explosion, and highlights the various services and applications that users will enjoy with a home network. Home networking shouldn't stand-alone though, and only with a fast, quality Internet connection can the online family really get the full benefit of their network. Digital Subscriber Line (DSL) provides the online family with the speed they need to reach the full potential of online life.

What is a Home Network?

A home network is a group of computers, printers, scanners, video set top boxes, home appliances, game consoles or other devices connected together inside a home. This network enables these devices to share a broadband connection, share information and communicate with each other.



**** IN MOST CASES DSL MODEM & HOME NETWORKING GATEWAY ARE IN THE SAME BOX.***

With a home network, users can share a DSL Internet connection between computers in the home, easily share files and printers between PCs, provide home entertainment by sending digital audio and video from a PC or set top box to a stereo and television, control home automation systems and much more. Multiple users operating on a home network are able to perform tasks much quicker and more conveniently while sharing high speed DSL service. By sharing one broadband line, instead of multiple dial up lines, families can reduce the overall cost of computing within the home.

What are a home network's basic elements?

Today's typical home network includes one or more computers (Personal Computers (PCs) and laptops/notebooks), a DSL home networking gateway, network adapters, and wireline or wireless media. Many of these elements today are built directly into the PC.

Home networks are also evolving to include gaming consoles, video and audio players, security and monitoring cameras and numerous other home network devices. The more devices in the home, the more reasons to build a home network. A home network uses all of the basic elements noted above to make it possible for the computers and home network devices to communicate with each other. Now, we will walk through the various elements of a home network.

Personal Computers and Laptops/Notebooks: You will typically have at least one PC or laptop/notebook in your home where you can perform email, web searches, and other network services, such as online shopping.



Network Adapter: As the name implies, Network Adapters enable or adapt a PC or other device to connect to a wireline or wireless network in the home when the device is not originally equipped to do so. Many PCs or home network devices already have network capabilities integrated into them. Others do not. Common examples of wireline Network Adapters include Ethernet Network Interface Cards (NICs) and Universal Serial Bus or USB Adapters. There are also Wireless Network Adapters.

In the case of a wired connection, the NIC or USB interface commonly connects devices using a physical cable. In the wireless scenario, the network adapter connects and communicates with devices over radio waves to a wireless access point. These adapters enable the connections that are required to send and receive data between one

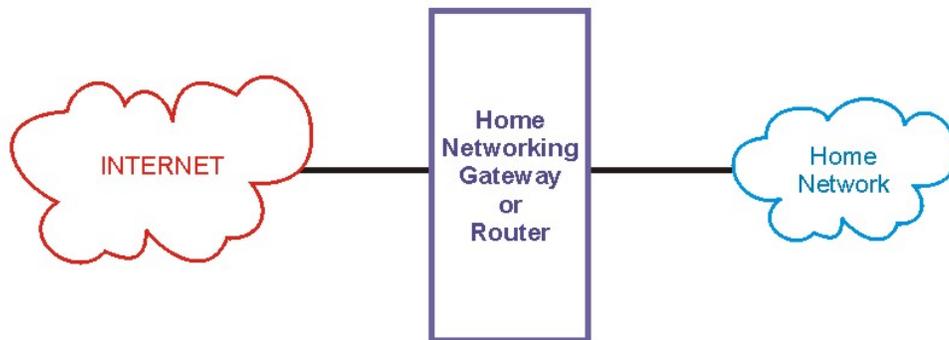
device and other devices on the network. When the home networking device does not include the desired network adapter, an external adapter, often called a bridge or dongle, can be used to provide the connection.

A Modem:

Interface device between the computer or home network and the access line. A DSL modem is used to connect a computer or home network to the Internet over a DSL Broadband service.

A DSL Home Networking Gateway (Router):

Before one can appreciate the role of a DSL home networking gateway (router), it is necessary to first understand some of the functions it performs. On its own, a gateway creates a small network within the home. With the home network in place, the next function a gateway performs is to connect the home network to a larger network – the Internet. Commonly, a gateway will connect a home network to the Internet over a DSL based Internet access service.



Gateways Connect Networks Together

A DSL home networking gateway has a built-in DSL modem, which allows all the devices attached to the gateway to share a high speed DSL connection. It is possible for the DSL modem and gateway to be separate devices.

A DSL gateway will have a number of ports that connect a variety of wireline or wireless connections. This allows the networked devices in the home to communicate with each other and the Internet.

Network Media: Network media may take the form of a physical connection (cabling) or wireless connection (radio waves) to connect two or more devices. Cabling is the physical connection that enables data to travel between PCs, DSL Gateways, and other devices. Examples of network cabling include Ethernet wires, phone lines, and power lines. These lines generally run between the PC's Network Adaptor and a DSL Gateway port. Network cables connect the Gateway to each individual PC, while wireless media allows for the same type of connection via radio waves rather than a physical cable.

Why Build a Home Network

Companies who provide DSL service over telephone lines have a long history of building, maintaining and operating world-class reliable voice and data networks. Today, these service providers also provide a new bundle of value added services, via DSL, to the consumer. These services include voice, video content, music downloads and online gaming. For these reasons, more and more people are turning to their DSL service providers for high-speed Internet service.

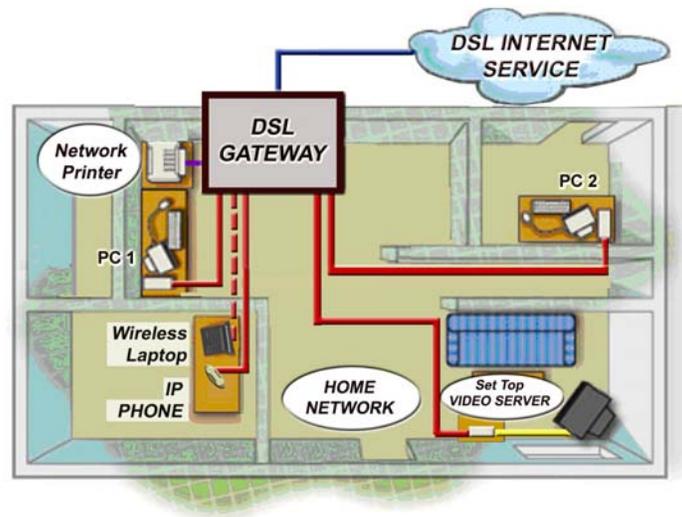
As voice, video and other applications become more popular; DSL users will want to share their DSL connectivity throughout the home. They accomplish this by building a home network. The top reasons for a user to build a home network are:

- Shared Internet Access
- File and Printer Sharing
- Telecommuting
- Multiplayer Gaming
- Entertainment – Audio and Video Distribution
- Home Control, Automation and Security Monitoring

Let's take a closer look at each of these reasons.

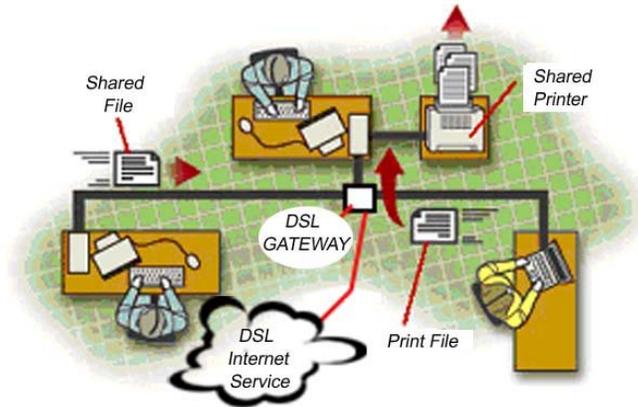
Shared Internet Access

The primary use for a home network among users is to share a high speed Internet service between all of the computers within the home. This way, any or all users in the home can enjoy the benefits of the high-speed connectivity to email, surf, chat, and explore newsgroups and more at the same time. DSL and home networking means Mom can telecommute in the home office, while Dad does online banking in the kitchen and the kids in the living room, play games over the Internet against their friends across the street.



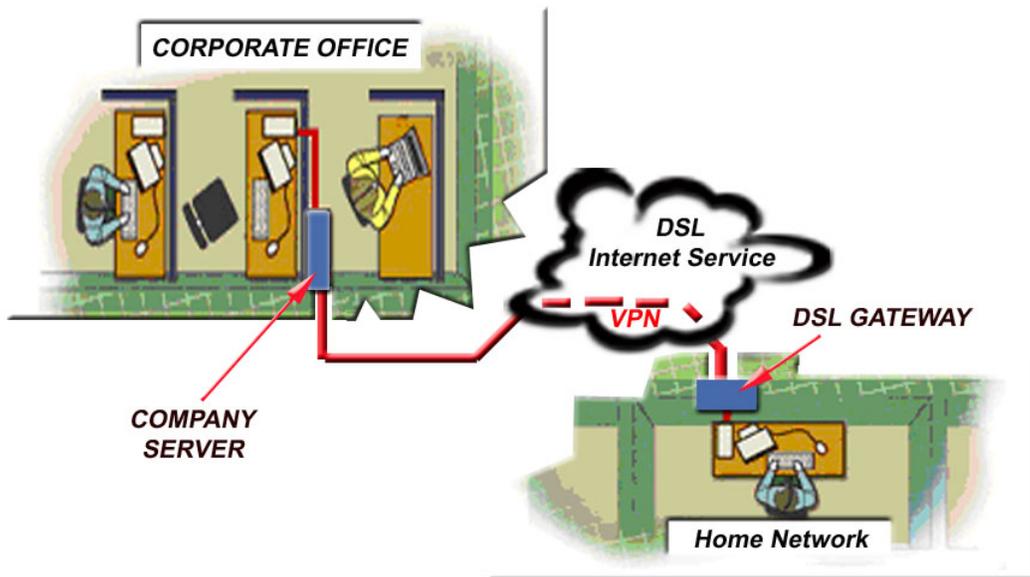
File and Printer Sharing

Users on a home network can easily share files, printers and storage devices. Files can be shared between users and computers much more conveniently without having to transfer files using disks or removable drives. Ultimately, users benefit by saving the cost of buying additional printers and file storage devices for each computer in the home.



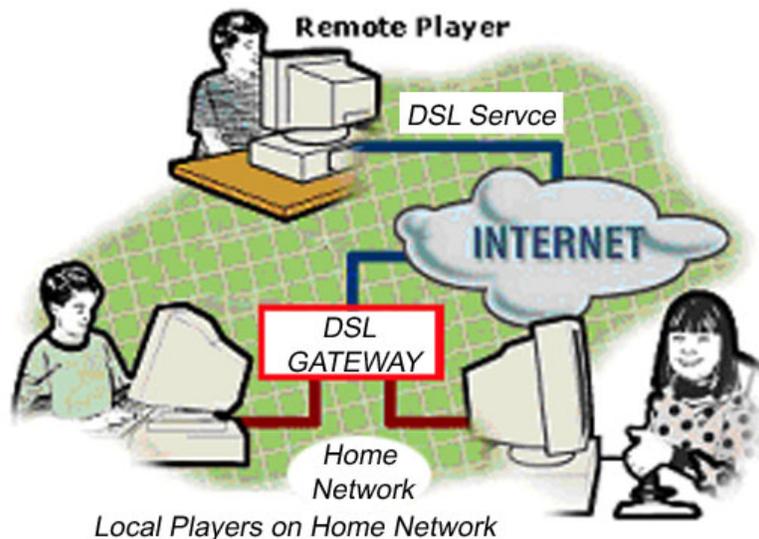
Telecommuting

Many users are interested in connecting their work laptops/notebooks to the Internet allowing them to work from home. Before DSL, doing so meant tying up the telephone line. Now DSL gives these users virtually the same speed experience at home as they would have at the office while keeping their telephone line free to receive calls. What's more, with the advent of Virtual Private Networks (VPNs), users can log into their corporate network to access email, files, Intranet or the Internet securely, although not all companies support this capability.



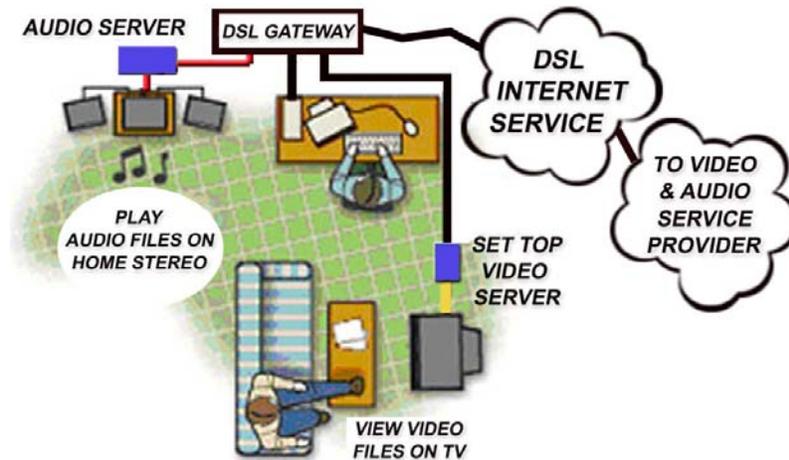
Multiplayer Gaming

As the capabilities of gaming applications and consoles continue to expand and more users adopt DSL, many users are taking advantage of their broadband connections to play Internet games with other players around the neighborhood, country or world. The home network of today can be set up to support all kinds of gaming applications for those that prefer to engage in head to head competition with family members or friends on their home network.



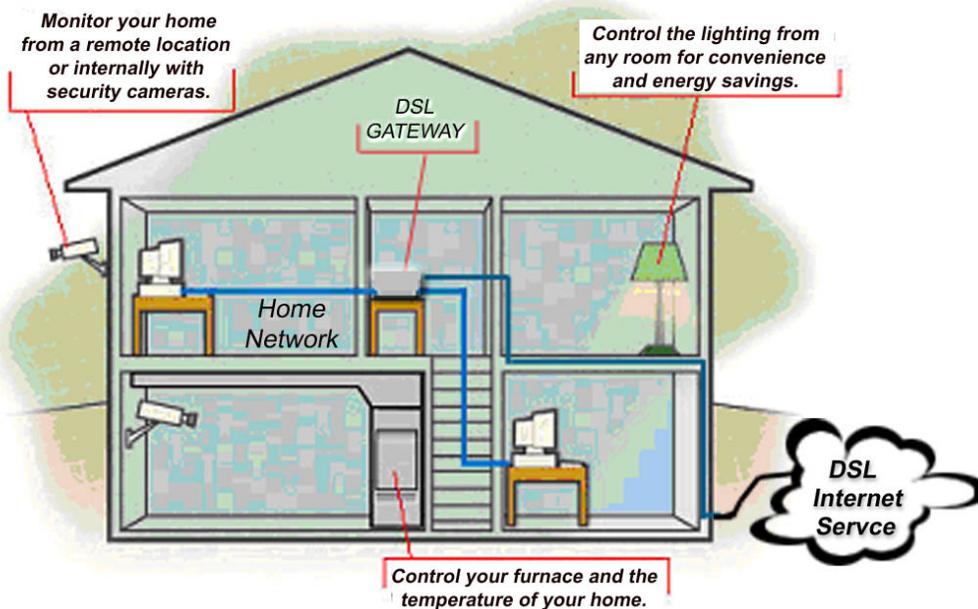
Entertainment – Audio and Video Distribution

The home network can also be used for entertainment activities like enjoying music, television, and movies around the home. An example of this is the ability to distribute audio (MP3) files and video files from a computer or set top box to the stereo system or televisions in the home. Video-on-demand will provide the ability to watch any movie at any time, on any television in the home, without having to bother with DVDs or videocassettes, simply by accessing the movie from a service provider via DSL. Or imagine being able to listen to an enormous selection of personalized music on your stereo system or media player commercial-free!



Home Control, Automation and Security Monitoring

The ability to control and monitor the environment within and outside the home is a promising opportunity for DSL users. Home Networks can be configured in conjunction with home control devices to manage lighting, heating, air conditioning, and security over the Internet. Imagine sitting in your office and at the same time, remotely adjusting the temperature in your home, turning on the lights in your living room and double-checking your security system over the Internet.



Room to Grow

This guide discusses just a few of the reasons to build a DSL home network and shares some of the benefits that can be realized. Telephone companies, content providers and equipment vendors in the DSL industry continue to add new applications, such as streaming video, and advanced home automation that will make users' lives more convenient and enjoyable.

Today, you can use a home network to surf the Internet or exchange emails with coworkers while sitting in your living room or on the patio. At the same time your children can do online homework research, play games online, or chat with friends. The possibilities of how you'll use your home network tomorrow are endless.

For more information, check out www.dslforum.org.